



ND Oil & Gas Research Council



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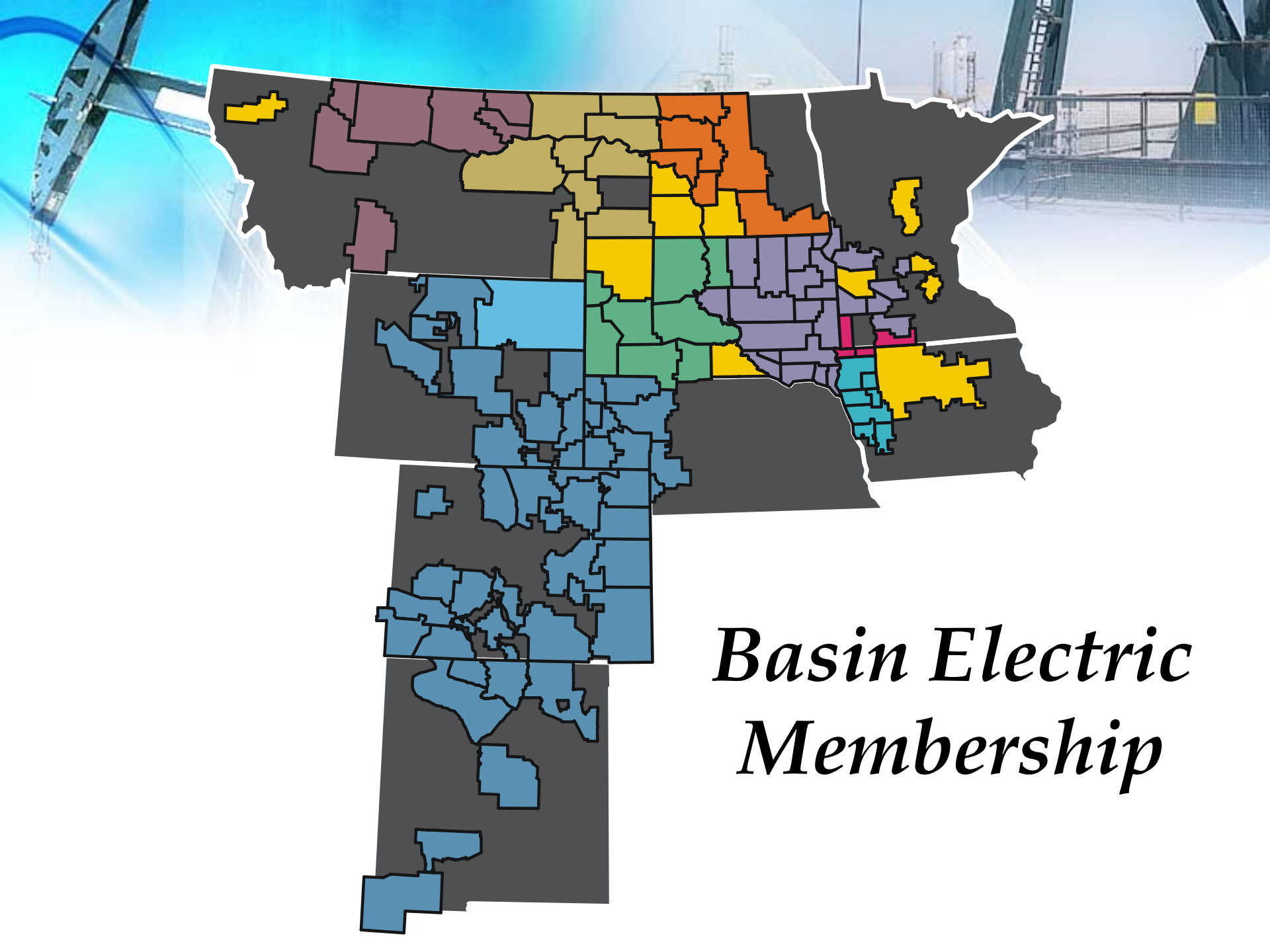


# **Follow-up to April Discussion**

**Requested funding assistance from :**

- ND Oil and Gas Industrial Commission**
- ND Transmission Authority**

**To help fund an independent review of future oil and gas-related electric loads in the Williston Basin**



# *Basin Electric Membership*



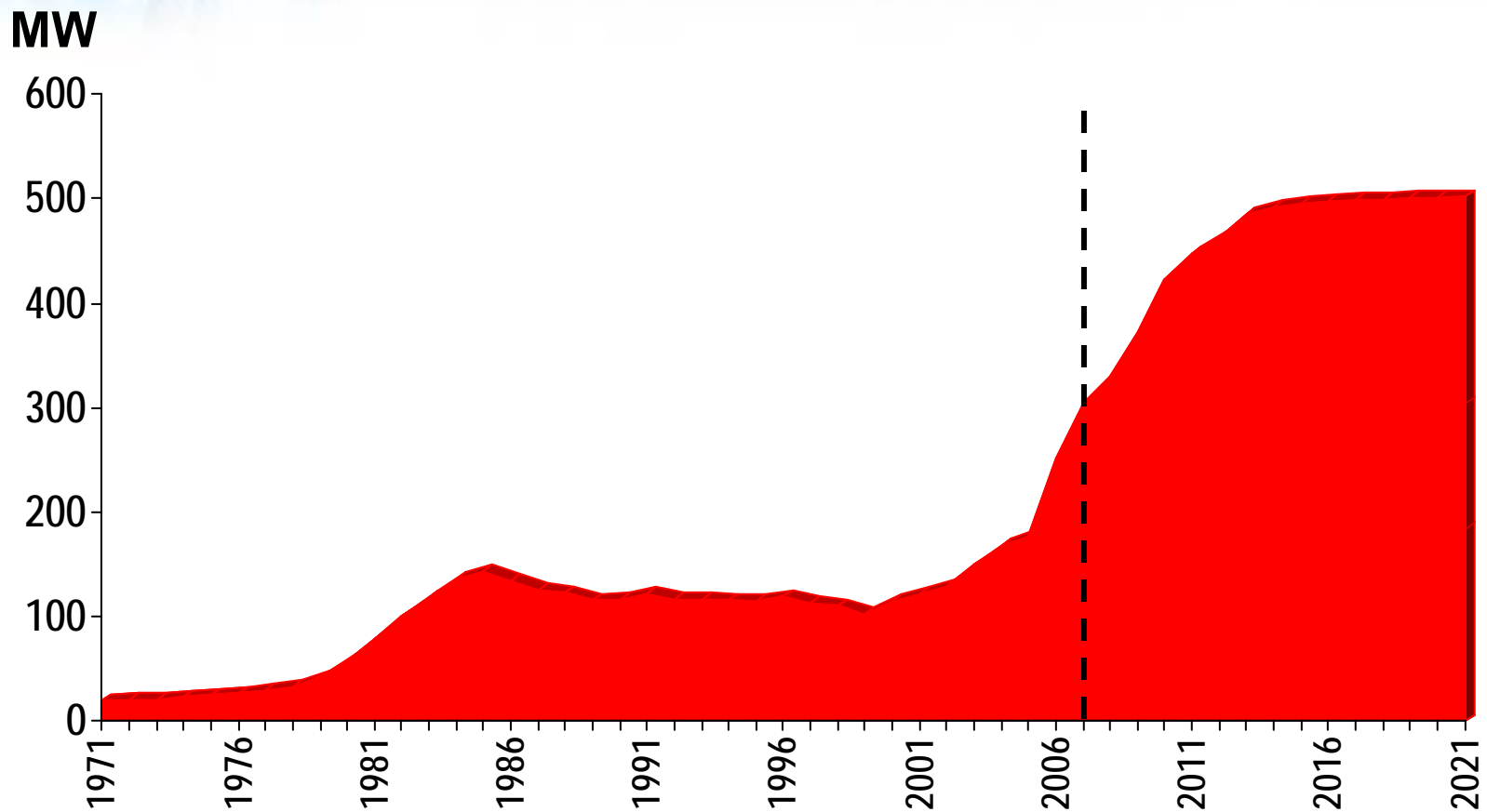
# Oil/Gas



A map of the Williston Basin, an oil and gas producing region in the northern United States. The basin is highlighted in orange and is located in the northern part of the map, covering parts of North Dakota, South Dakota, and Minnesota. The surrounding areas are colored green. The map is overlaid on a background image of an oil rig.

**Williston  
Basin**

# 2007 Basin Electric Oil Related Electric Load Forecast



# Transmission Load Serving Ability





# **Independent 3rd Party Review**

- **Interview Developers**
- **Evaluate Drilling Plans**
- **Evaluate Pipeline Capability**
- **Review Environmental Issues**
- **Evaluate Economic Viability**
- **Estimate Load Growth Potential**





# **PACE Global Energy Services**

- **25 Years Consulting Experience**
- **Oil and Gas Expertise**
- **Demonstrated Staff Capability**



# **Interviews Completed**

- **Conoco-Phillips**
- **Continental Resources, Inc.**
- **Enbridge Pipelines**
- **Enerplus**
- **EOG Resources**
- **Evertson**
- **Harris, Brown & Kilmer, Inc.**
- **HDR**
- **Headington Oil Co.**
- **Hess**
- **Hiland Partners**
- **Luff Exploration**
- **Marathon Oil Co.**
- **MT Oil & Gas Commission**
- **MUREX**
- **Nance Petroleum**
- **ND Industrial Commission**
- **ND Petroleum Council**
- **ND State Land Dept.**
- **ONEOK Field Services**
- **Plains All-American Pipeline**
- **Slawson**
- **Whiting**

**Confidentiality Agreements**

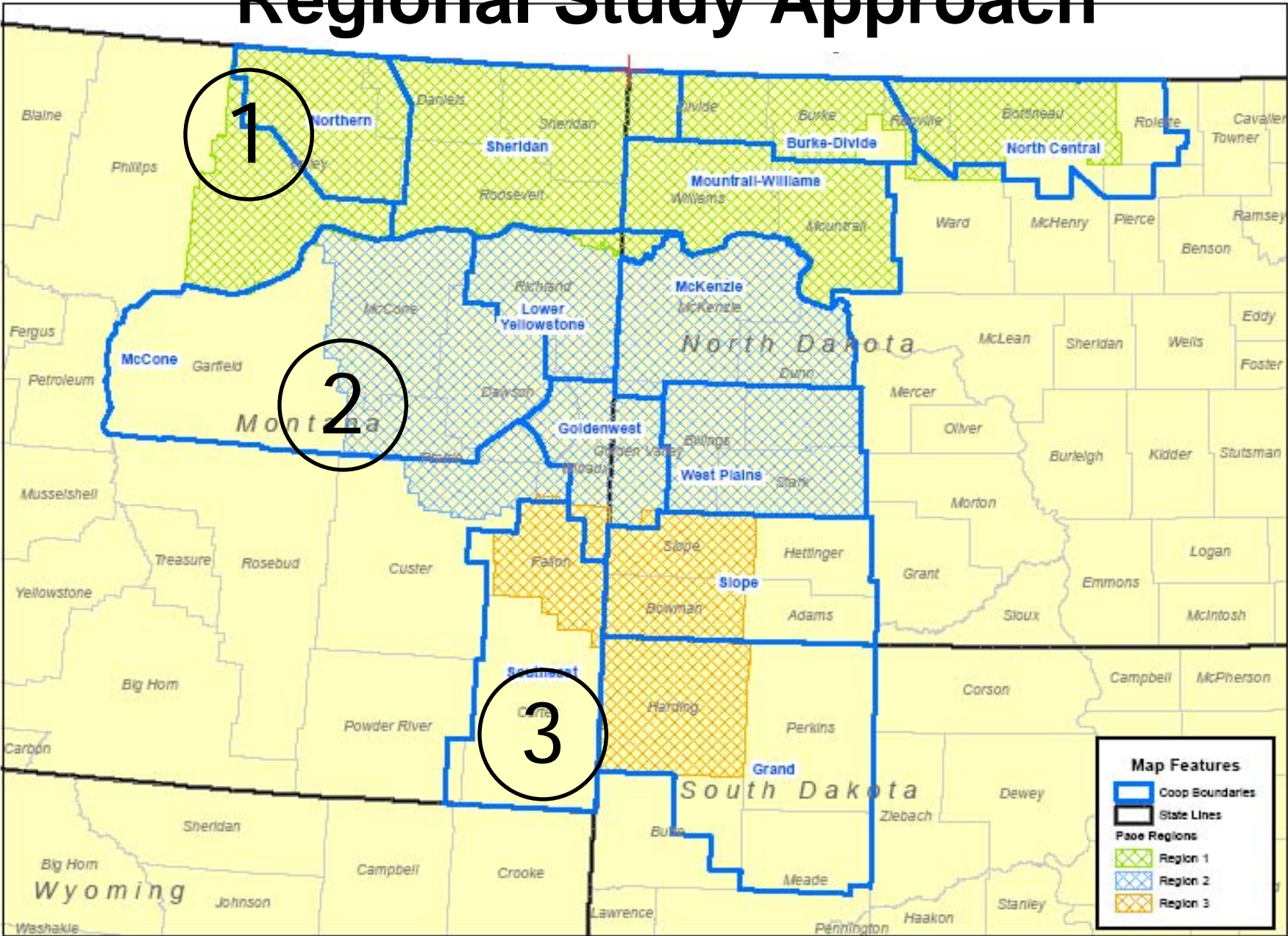
# Regional Study Approach

The map illustrates the regional study approach across the Northern Plains, specifically focusing on Montana, North Dakota, and South Dakota. The regions are defined by cooperative boundaries and are color-coded:

- Region 1 (Green):** Includes Northern, Sheridan, Burke-Divide, Mountrail-Williams, and North Central counties.
- Region 2 (Blue):** Includes McCone, Garfield, Lower Yellowstone, Goldenwest, West Plains, and Slope counties.
- Region 3 (Orange):** Includes Fallon, Bowman, Harding, and Grand counties.

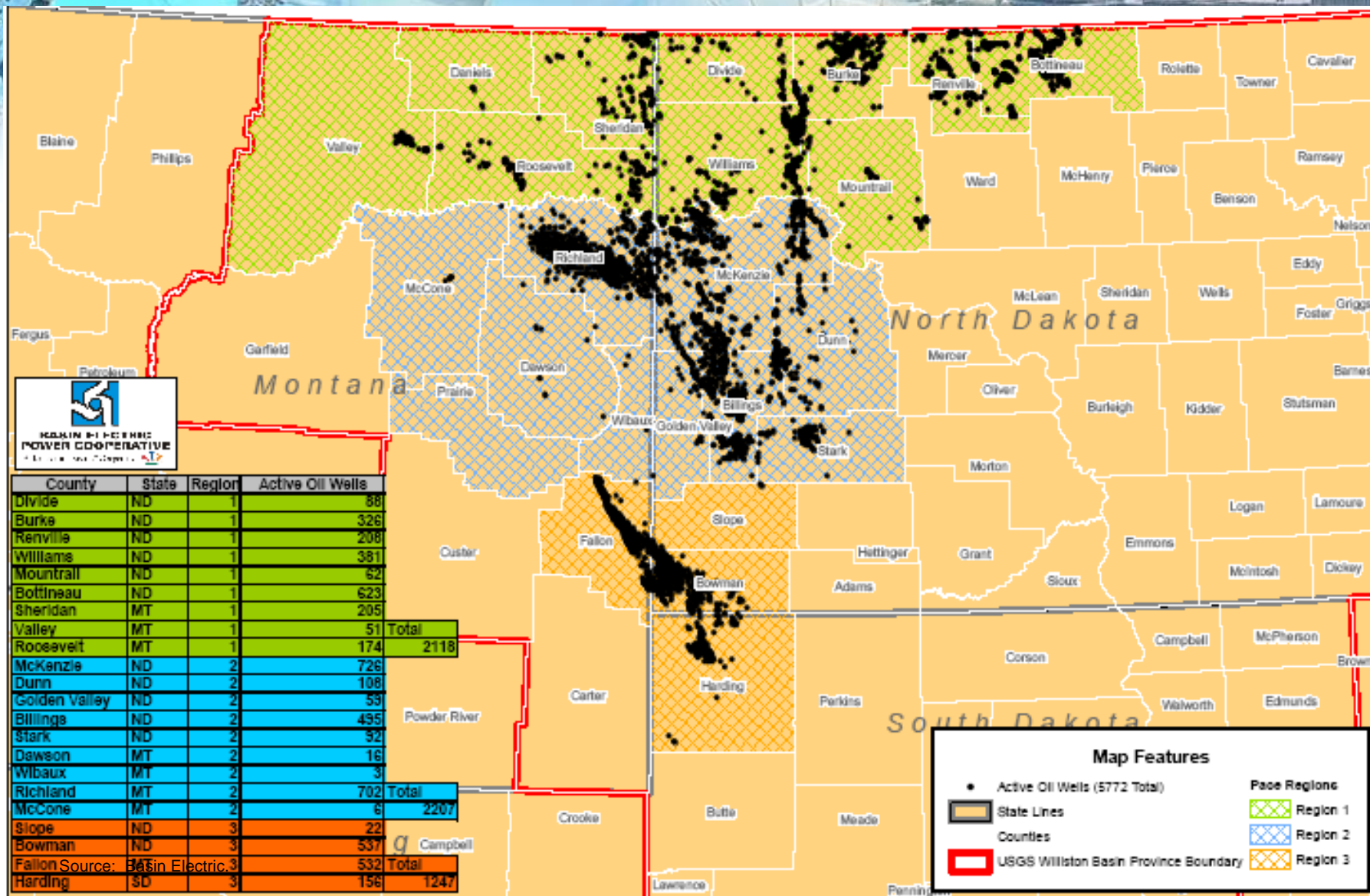
The map also shows state lines and county names. A legend in the bottom right corner defines the map features:

- Coop Boundaries (Blue line)
- State Lines (Black line)
- Base Regions (Green, Blue, Orange)





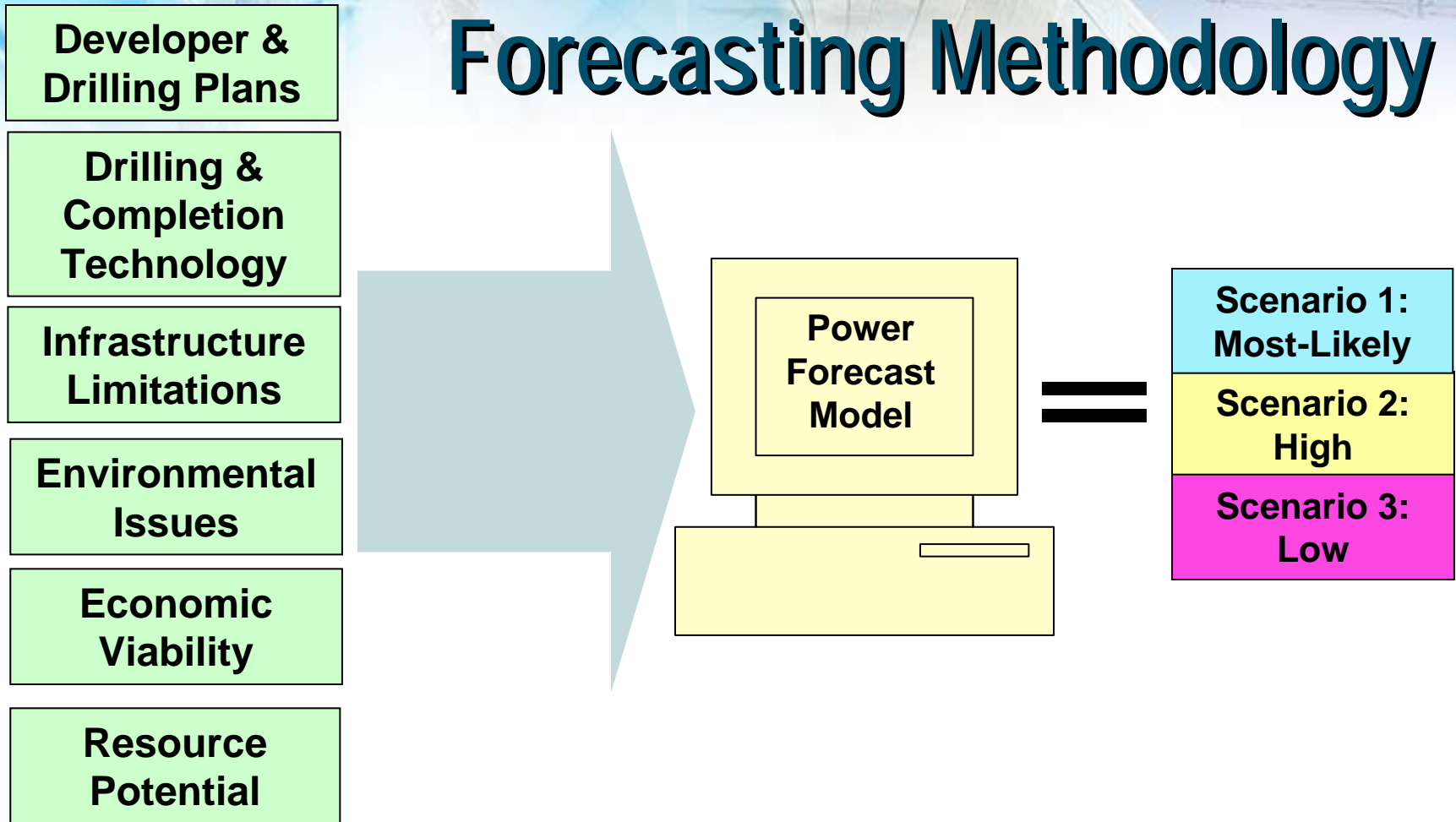
# Current Oil Development







# Forecasting Methodology



The background of the slide features a composite image. On the left, there is a close-up of an oil rig's derrick structure against a bright blue sky. On the right, a more distant view of an industrial facility, possibly a refinery or processing plant, is visible with various tanks and piping. The overall color scheme is dominated by blues and greys, with a semi-transparent white area in the center where the text is located.

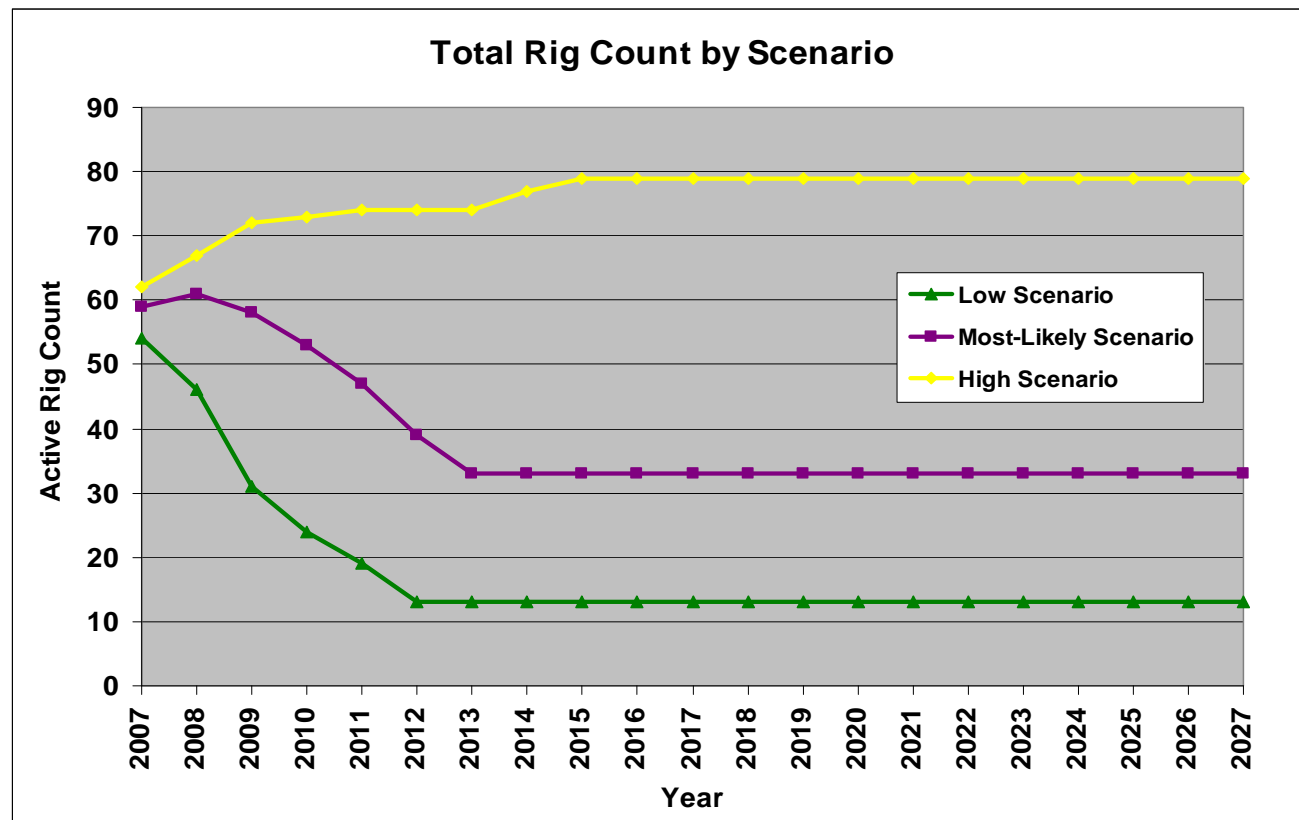
# Key Findings

- **Continued development with long-term oil price over \$45 / Bbl.**
- **Lack of electric power will NOT constrain development.**
- **No significant environmental concerns.**
- **Rapid, large-scale development may be constrained by:**
  - **Unpredictable well performance;**
  - **Superior investment opportunities in other basins;**
  - **Availability of drilling rigs, oil field services, and skilled labor;**
  - **Time required to obtain title checks, drilling permits, and build locations;**
  - **New technology developments for the Bakken Shale Formation.**

# Forecast Assumptions

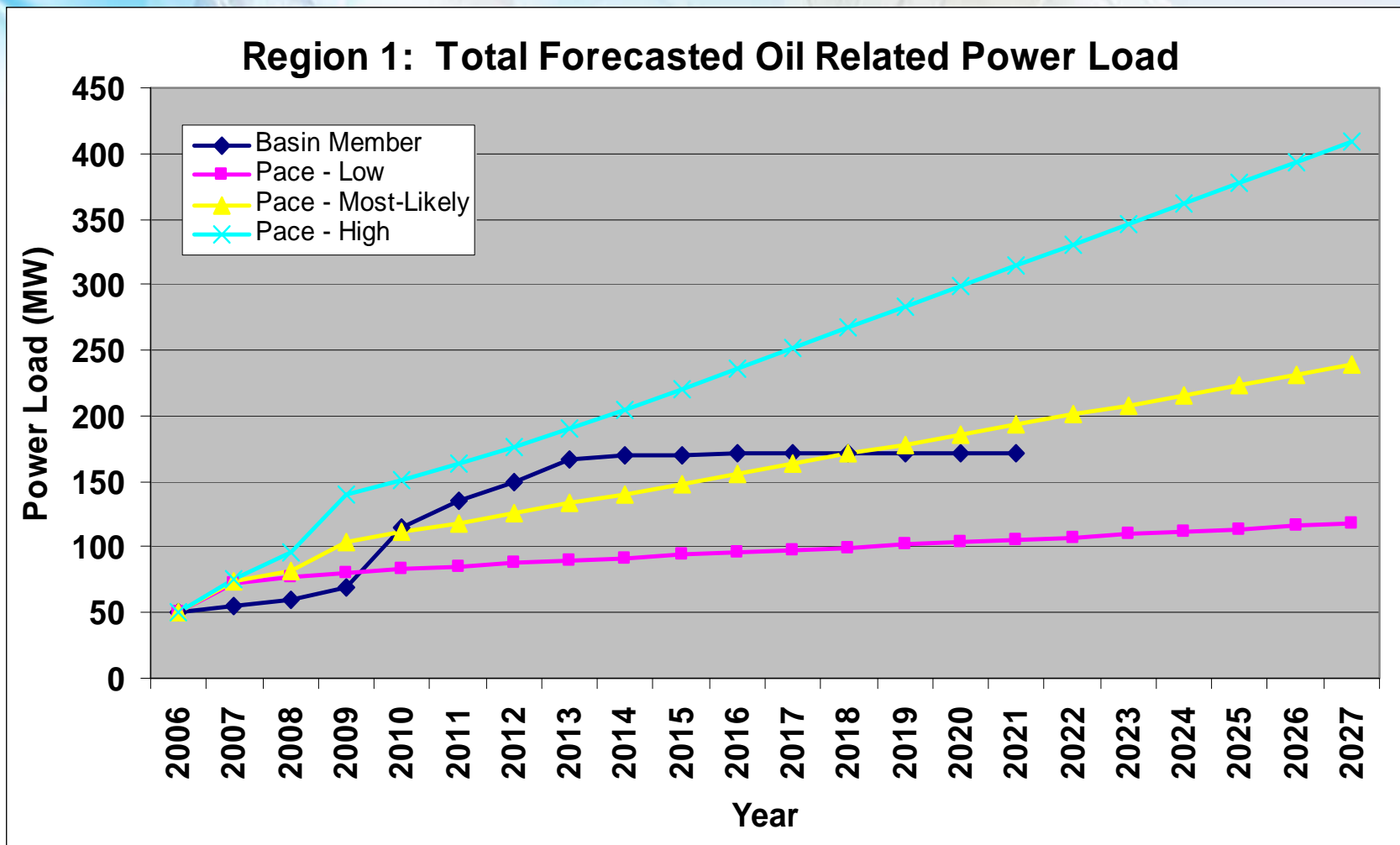
- Drilling activity is the key driver to development.

- Most-Likely Scenario
  - Oil Price \$45/Bbl
- High Scenario
  - High Oil Price (\$60/Bbl)
  - Technology Improvements
  - Greater Development of the Bakken Formation
- Low Scenario
  - Low Oil Price (\$25/Bbl)



Source: Pace Global.

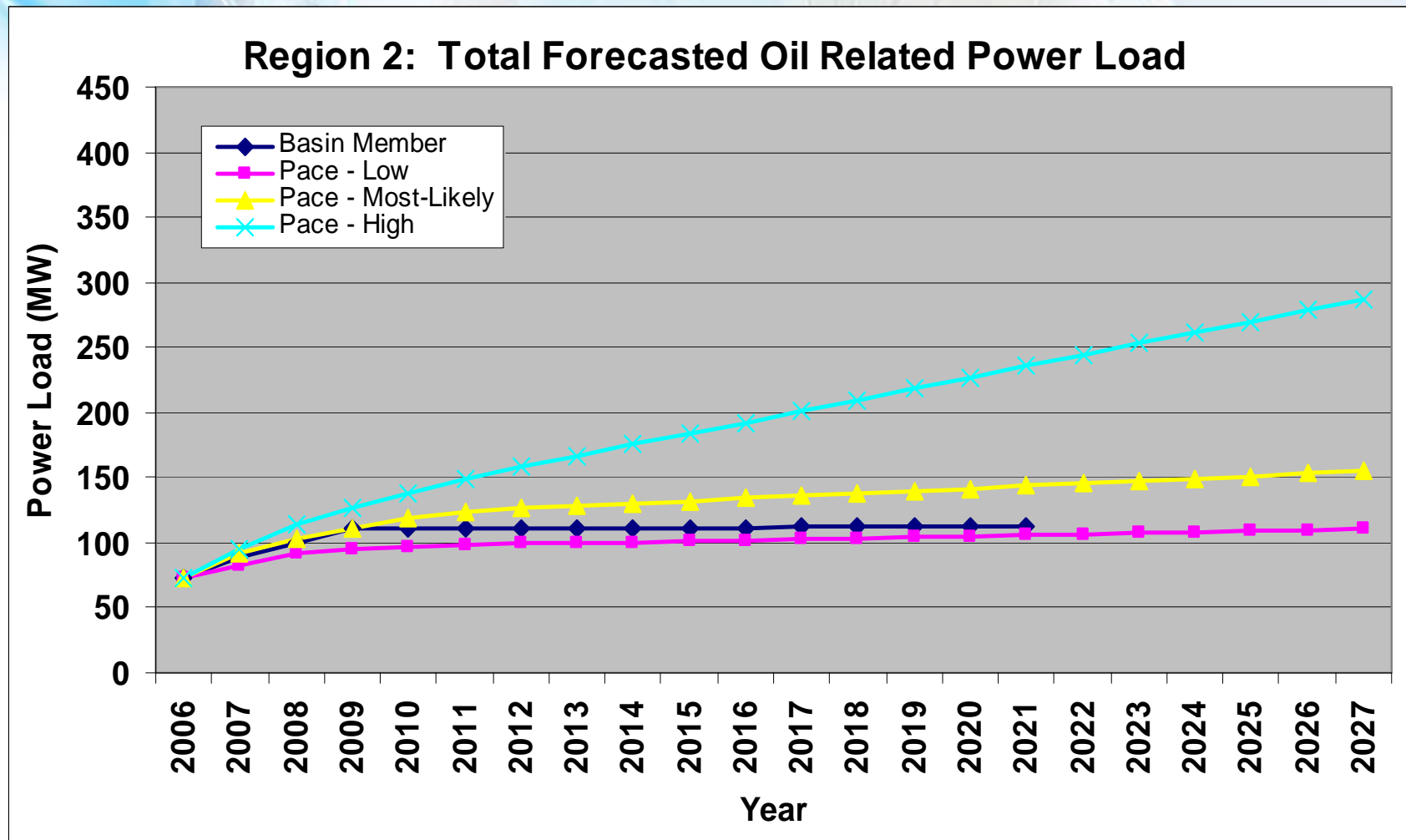
# 2007 Forecast Results



Sources: Pace Global, Basin Electric.



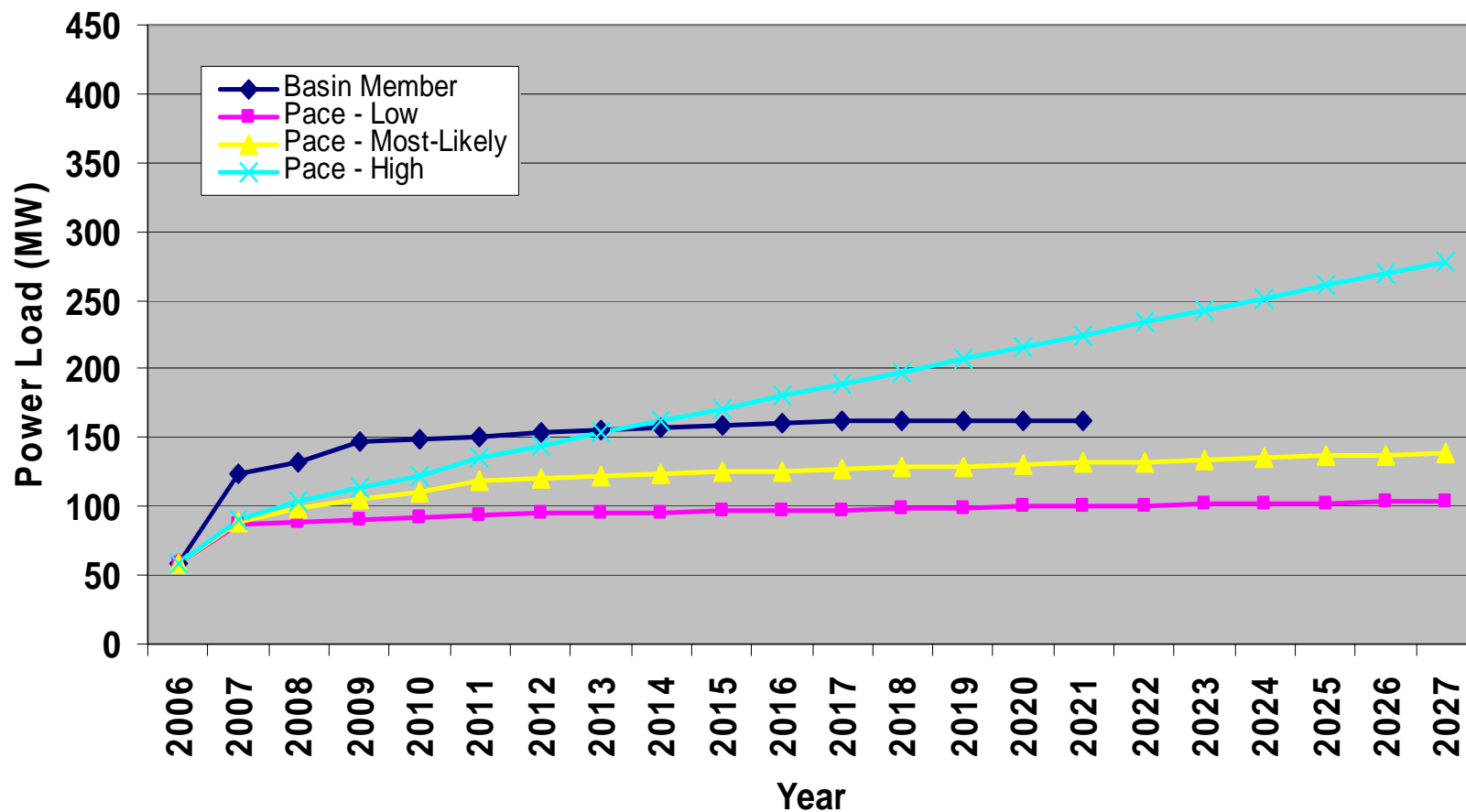
# 2007 Forecast Results



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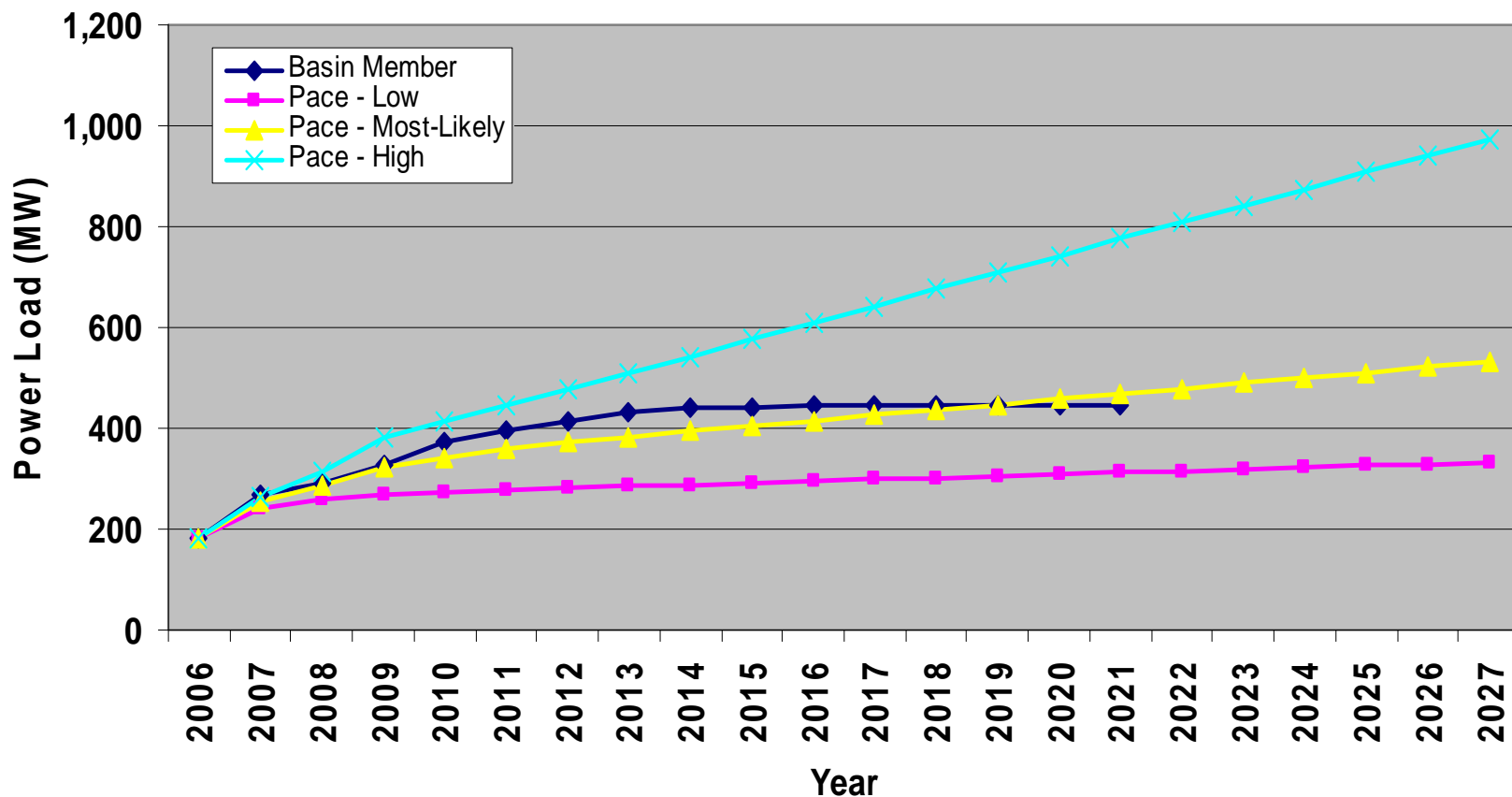
# 2007 Forecast Results

## Region 3: Total Forecasted Oil Related Power Load

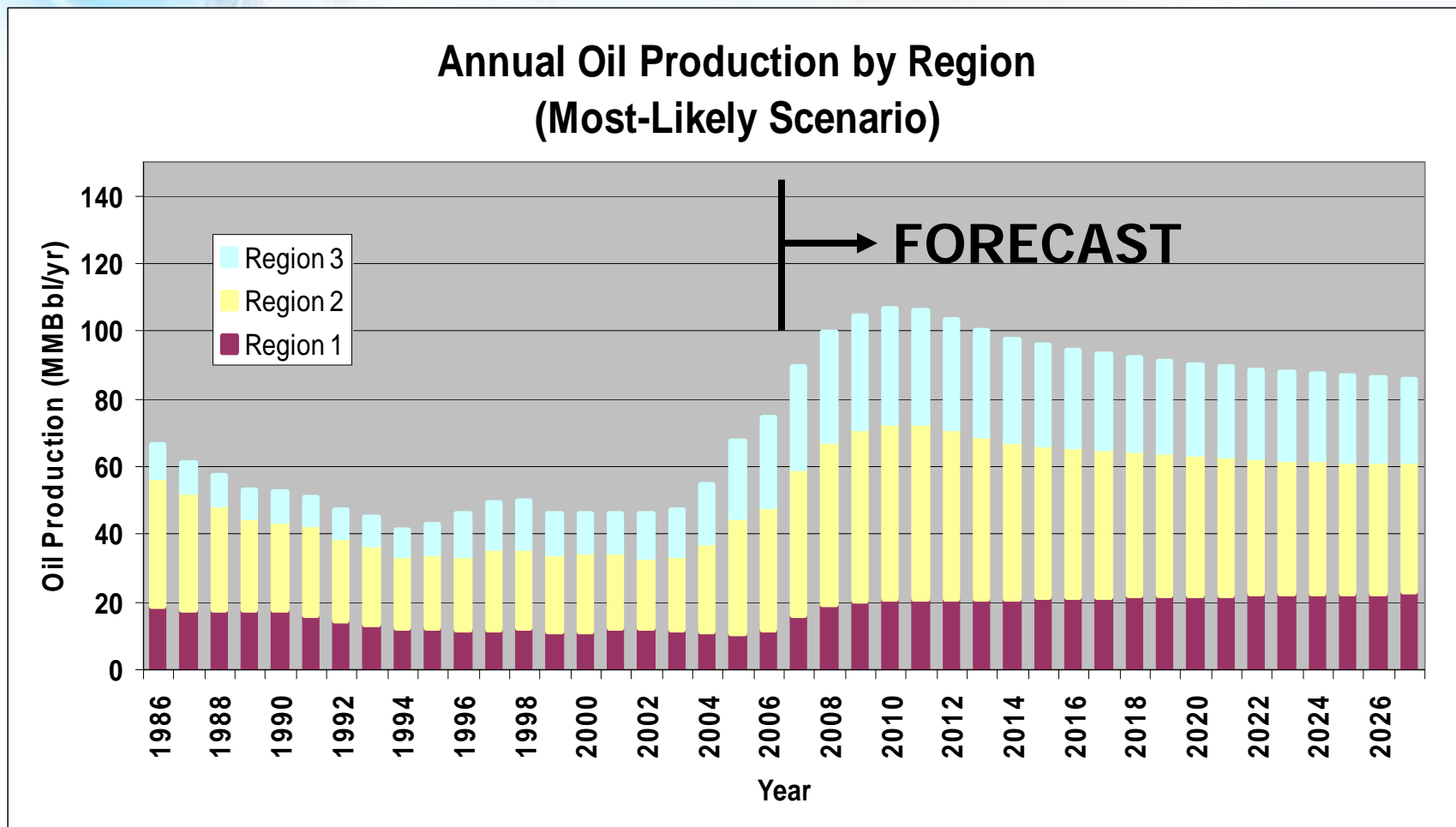


# 2007 Forecast Results

## Total Forecasted Oil Related Power Load



# Regional Annual Oil Production Historical and Forecasted





The background of the slide features a composite image. On the left, there is a close-up of an oil rig's derrick structure against a bright blue sky. On the right, a more distant view of an industrial facility, possibly a refinery or processing plant, is visible with various tanks and piping. The overall color scheme is dominated by blues and greys, with a semi-transparent white area where the text is located.

# **Oil Production and Pipeline Capacity**

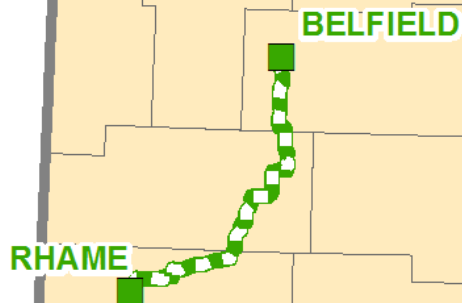
- **Study focused on electrical load levels**
  - **Driven by Horse Power needs**
- **Oil Production Forecast :**
  - **Developed to review Pipeline Capacity Availability**
  - **Derived for internal needs**
- **Concern :**
  - **Pipeline take-away capacity is critical to western ND oil development**

# Western North Dakota Transmission System Committed Projects



# Southwest North Dakota

- Public Meetings
- Environmental
- PSC Permit Application
- Right-Of-Way
- Engineering
- Completion - 2010







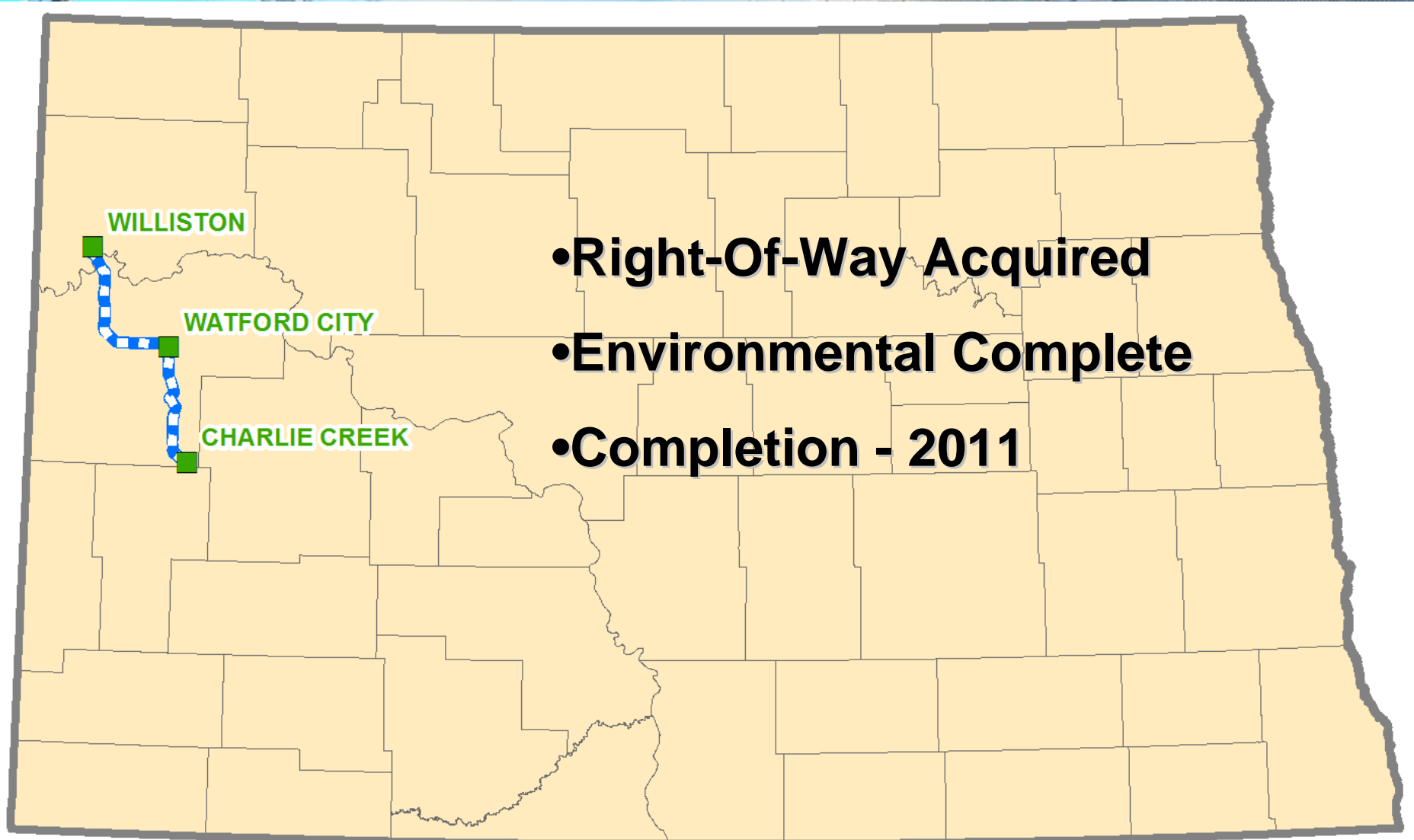
# Project Costs

## Southwest North Dakota

<b>Belfield Substation Addition</b>	<b>\$ 4,000,000</b>
<b>Rhame Substation</b>	<b>8,000,000</b>
<b>Rhame to Belfield Line</b>	<b>19,000,000</b>
<b>Communication Facilities</b>	<b>2,000,000</b>
<b>Baker to Hettinger Line Capacity Study</b>	<b><u>200,000</u></b>
	<b>\$33,200,000</b>



# West Central North Dakota



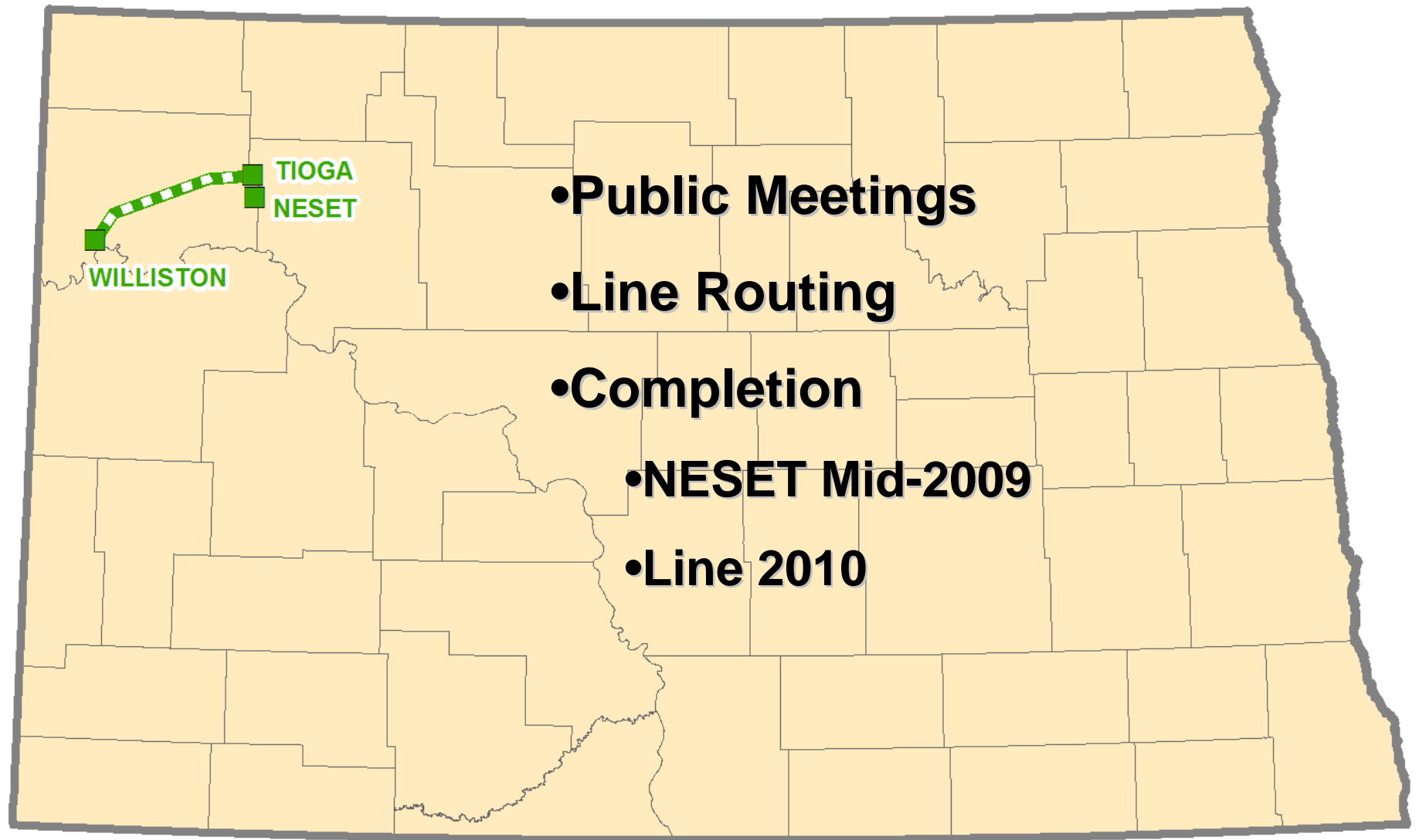


# **Project Costs**

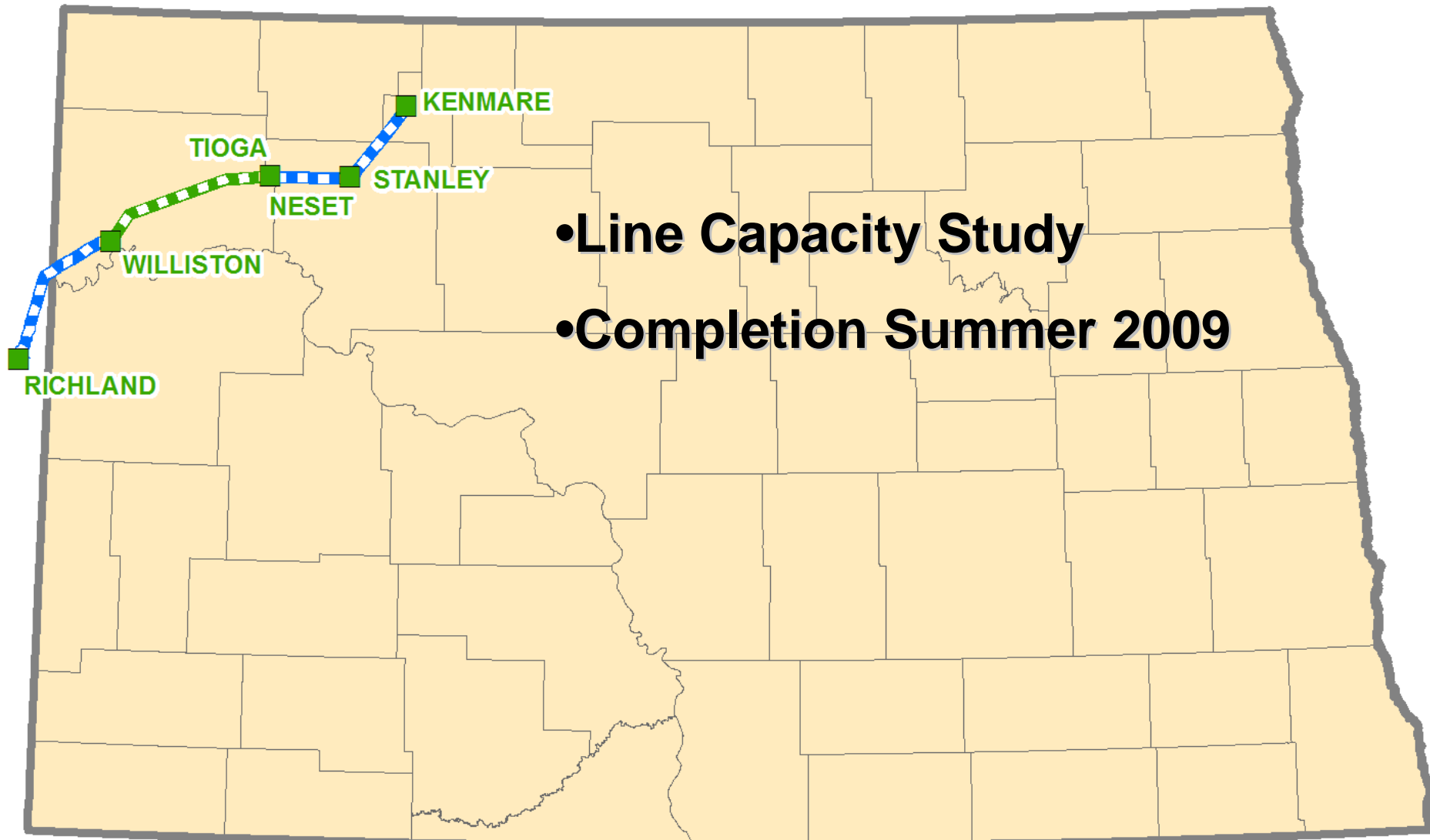
## **West Central North Dakota**

<b>Charlie Creek Substation Addition</b>	<b>\$10,700,000</b>
<b>Watford City Substation Addition</b>	<b>4,500,000</b>
<b>Williston Substation Addition</b>	<b>6,000,000</b>
<b>Charlie Creek to Williston Line Rebuild</b>	<b><u>18,800,000</u></b>
	<b>\$40,000,000</b>

# Northwest North Dakota

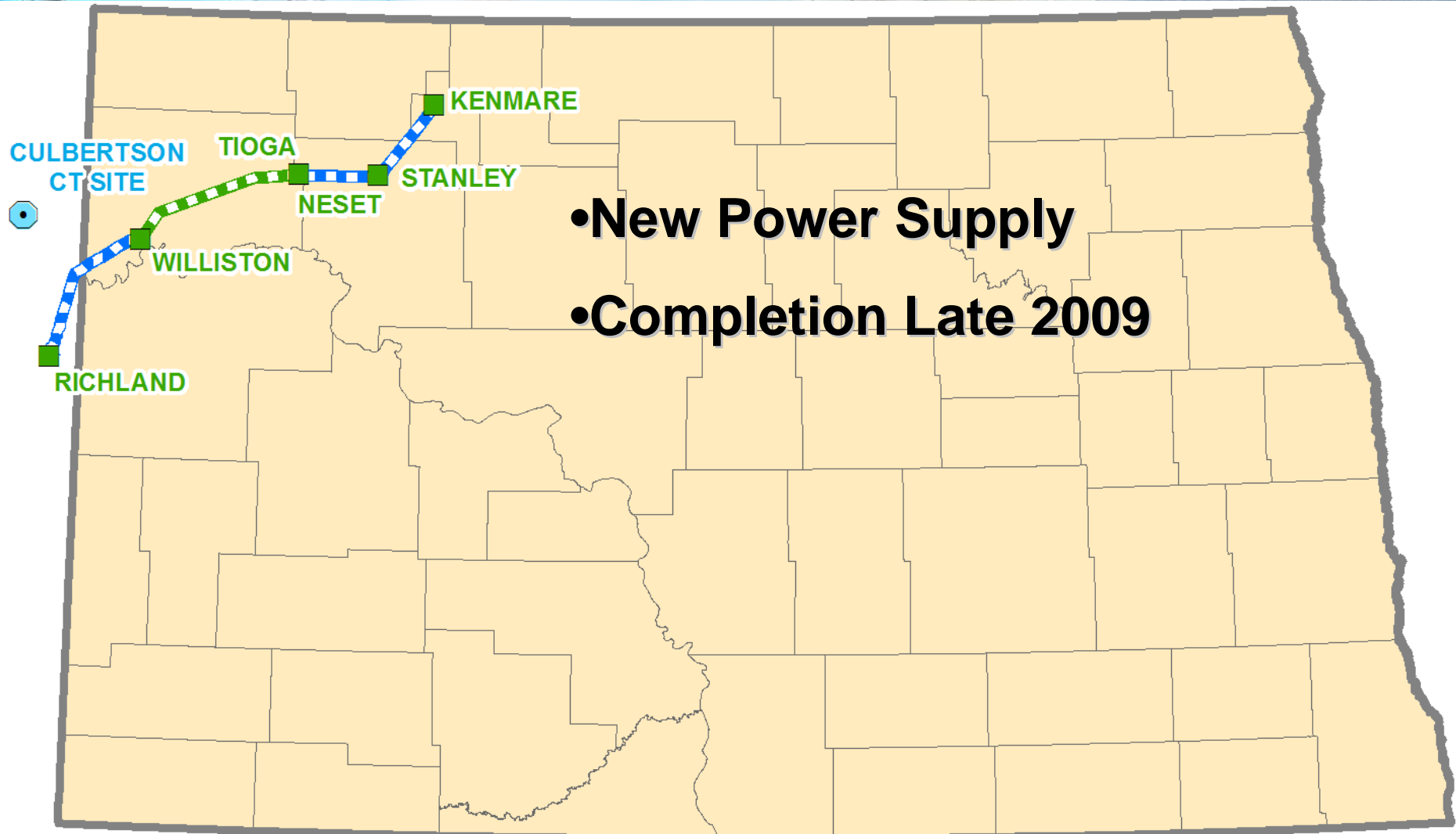


# Northwest North Dakota





# Northwest North Dakota





# **Project Costs**

## **Northwest North Dakota**

<b>Tioga Substation Addition</b>	<b>\$ 2,000,000</b>
<b>Williston to Tioga 230 KV Line</b>	<b>15,000,000</b>
<b>Communications Facilities</b>	<b>1,500,000</b>
<b>NESET Substation</b>	<b>12,000,000</b>
<b>Line Capacity Studies</b>	<b><u>200,000</u></b>
	<b><u>\$30,700,000</u></b>



# Cost Summary

<b>Southwest North Dakota</b>	<b>\$ 33,200,000</b>
<b>West Central North Dakota</b>	<b>40,000,000</b>
<b>Northwest North Dakota</b>	<b>30,700,000</b>
<b>Culbertson CT</b>	<b><u>101,500,000</u></b>
<b>TOTAL</b>	<b>\$204,400,000</b>



***For Your Support***





# **ND Transmission Authority Support**

**Loan:** \$25 Million from Bank of ND/Wells Fargo

**Purpose:** To assist in financing necessary transmission to meet oil field development in western North Dakota

**Security:** Note secured by substantially all of the assets of Basin Electric

**Tenure:** 20 years, equal semi-annual principal payments

**Rate:** Fixed 5.395%



# Questions

